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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/787,321	05/17/2001	Naohiro Hirose	P27675	7824

909 7590 03/14/2002

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EXAMINER

PATEL, ISHWARBHAI B

ART UNIT PAPER NUMBER

2827

DATE MAILED: 03/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/787,321

Applicant(s)

HIROSE ET AL.

Examiner

Ishwar B Patel

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 3/9/02 KL
- 1) ☒ Responsive to communication(s) filed on 20 July 2001, *preliminary amendment*.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 September 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because the numbers assigned to the figures are confusing. Where as each page is given a new figure number, the subsequent second reference number is in continuation with that of the previous page. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. Figures 9(C) and 23 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1-7 are rejected under 35 U.S.C. 102(a) as being anticipated by Akira Wakasaki, (Japanese Patent JP410163634A, disclosed by the applicant).

Regarding claim 1-2, Akira discloses a multiplayer build-up wiring board obtained by alternatively providing interlayer resin insulating layers and conductor layers comprising:

a plurality of plain layers formed as said conductor layers (layers 4a, 4b, see figure 1);

and mesh holes formed in said plurality of plain layers so that at least part of the mesh holes overlay one another (mesh holes H, see figure 1).

Regarding claim 3, Akira further discloses meshed opening with a size or $2.5 \times 10^{-3} \text{ mm}^2$ to $90 \times 10^{-3} \text{ mm}^2$, which is about $50 \text{ }\mu\text{m}$ to $300 \text{ }\mu\text{m}$ and with 5 to 30 % total opening.

Regarding claim 4-7, Akira discloses all the features of the claimed invention as shown above including the chip mounted on the chip mounting region and the via land as shown on left side via of figure 1 is partly facing the chip mounting area as marked in red on the figure attached.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 8-12 rejected under 35 U.S.C. 103(a) as being unpatentable over Akira Wakasaki, Japanese Patent JP410163634A, as applied to claims 1-7 above, and further in view of Iadarola et al., (US Patent 4,543,715, hereafter Iadarola).

Regarding claim claims 8-12, the applicant is claiming a split via hole and the via holes filled with a filler. However, the various type of split via holes as well as via holes filled with the filler is known in the art. The split via holes will give more routing of the traces and the filled via hole will give additional strength to the conductive wall of the via, Iadarola discloses one such via hole providing vertical traces, see Iadarola figure 1, vertical traces 51-54 in opening 59. Therefore, it would have been obvious to one having ordinary skill in the art to provide the circuit board of Akira with split via as taught by Iadarola and via filled with filler in order to get additional routing and protection to the conductive wall of the vias.

7. Claims 13-14 rejected under 35 U.S.C. 103(a) as being unpatentable over Akira Wakasaki, Japanese Patent JP410163634A, as applied to claims 1-7 above, and further in view of Dinella et al., (US Patent 4,081,601, hereafter Dinella).

Regarding claims 13 and 14, the applicant is claiming the conductor layer formed of two metal layers with second metal layer thinner than the first one. However, such conductor layer made of multiple metal layers is well known in the art and various metals are used depending upon the specific requirement as shown by Dinella. A thinner noble metal layer such as gold layer on the copper layer is well known in the art for protecting the copper layer from environment and also for better solder connection. Dinella discloses such conductive layer made up of more than one layer, gold layer 23 on copper layer, see figure 2 of Dinella. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the circuit board of Akira with the conductor layer made of two metal layer as taught by Dinella in order to protect the base layer for a longer life and for better soldering to have a reliable connection.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Zu et al., Takahashi et al., Urasaki et al., Yamaguchi, Isoda et al., Kinoshita, Hideki Kato, Hideo Kawatsu and Akira Wakasaki disclose the circuit board assembly similar to applicant's claimed invention.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar B Patel whose telephone number is (703) 305 2617. The examiner can normally be reached on M-F (6:30 - 4) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave L Talbott can be reached on (703) 308 9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3431 for regular communications and (703) 305 7724 for After Final communications.

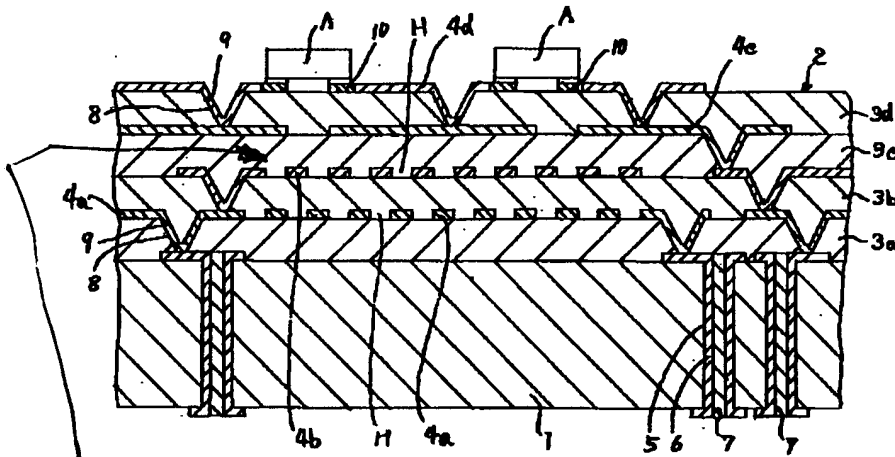
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

ibp
March 11, 2002

(figure marked in red attached)


K. Patel
Primary Examiner

【図1】



VIA PAD PARTLY BELOW
CHIP MOUNTING AREA

IBPatent
3/6/02.

APPLICATION #
09/787,321
GAV: 2827